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SOURCE GOST 2517-44, [Redacted Box]

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USSR STANDARD FOR SELECTION OF TEST SAMPLES
OF PETROLEUM PRODUCTS (GOST 2517-44)

(Petroleum Industry B 27)

[Figures referred to are appended.]

The present standard governs the selection of test samples of petroleum products in all their states (liquid, grease, and solid) as they are received, delivered, or stored at plants and bases.

I. METHODS OF SELECTING AND DESIGNATING SAMPLES

1. Depending on the form of the product, its storage, and transportation, the following methods for selecting test samples are established:

Form	Method of Selecting Sample
Liquid	From reservoirs and tankers From tank cars From pipelines and flumes From drums, barrels, cans
Grease	From barrels, cans, jars, and boxes
Solid	
Monolithic and laminated	From barrels and bags
Powdered	From bags and packages
Lumpy (nonmelting)	From cars and stock piles
Lumpy (melting)	From cars and stock piles

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2. According to their purpose, the samples are classified as follows: individual, composite, or control sample.

3. An individual sample is used to determine the quality of product in a certain container (barrel, can, sack, etc.), or at a certain given level of a reservoir, cistern, tanker, or pile; each test sample is taken in one operation.

NOTE: 1. An individual sample is called a "distribution sample" when taken at the time the product is delivered to the consumer from the distributing valve of a reservoir, or from the distributing pile.

11. An individual sample is called a "bottom sample" when the sample is taken from the lowest available level of a reservoir or tank.

4. A composite sample is applied to determine the average quality of a product in one or several reservoirs, cisterns, compartments of a tanker, piles, etc., or of a certain lot of the product, already in the container. A composite sample is always a test sample made by mixing all the samples taken.

NOTE: A composite sample is called a "running sample" when it is made up by mixing all the samples, taken at regular intervals from a pipeline or from the flow when the oil product is pumped.

5. A control sample is a portion of an individual or composite sample, taken for analysis.

NOTE: 1. A control sample is called an "umpire sample" if it is set aside for later umpire analysis.

11. A control sample is called a "captain's sample" if it is transmitted to recipient by the captain of tanker carrying the product.

II. METHOD OF SELECTING SAMPLES OF LIQUID PRODUCTS FROM RESERVOIRS AND TANKERS

6. For determining the quality of a product in reservoirs, a composite sample is selected from each reservoir.

7. For determining the quality of product in a tanker loaded with only one kind of product, the samples should be taken from not less than 25 percent of the number of compartments, as follows: from 5% of the fore compartments; from 15% of the midship compartments; from 5% of the aft compartments.

Then, for each compartment group from which samples are taken, a composite sample is obtained in accordance with paragraph 9 of this standard; from these composite samples, a composite sample of the whole tanker is obtained.

8. For determining the quality of the products in a tanker loaded with different kinds of petroleum products, the samples should be taken from not less than 25% or a minimum of two compartments loaded with product of the same kind. Then, for each compartment from which samples are taken, the composite sample is obtained in accordance with paragraph 9 of this standard. From these composite samples of compartments, the composite sample is obtained for each kind of product carried by the tanker.

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9. To obtain a composite sample of a product in one given reservoir or compartment of a tanker, the samples are taken off at upper, middle, and lower levels and then mixed in the following proportions, shown in the table below.

Table 1

<u>Vertical Reservoir</u>			<u>Horizontal Reservoir</u>	
<u>Sample From</u>	<u>Taken at</u>	<u>Portions For Com- posite Sample</u>	<u>Taken at</u>	<u>Portions For Com- posite Sample</u>
Upper level	10% of depth of liquid	1	10% of reservoir diameter	1
Middle level	Half the depth of liquid	3	Half the depth of liquid	8
Lower level	From lowest possible level after pumping water out. If reservoir has a fixed discharge pipe, at the level of the pipe	1	From the lowest possible level after pumping water out. If reservoir has a fixed discharge pipe, at the level of the pipe	1

10. For a horizontal reservoir, only partly filled, the composite sample is made up by mixing samples taken from upper, middle, and lower levels in the following proportions, as shown below.

Table 2

<u>Liquid Depth (% reservoir dia)</u>	<u>Level From Which Sample is Taken (% dia from bottom)</u>			<u>Portions for Composite Sample From Each Level</u>		
	<u>Upper</u>	<u>Middle</u>	<u>Lower</u>	<u>Upper</u>	<u>Middle</u>	<u>Lower</u>
10			From the lowest accessible level			1
20			after pumping			1
30		20	water out, or,		3	2
40		25	if the reservoir		7	3
50		30	has a fixed dis-		4	1
60	65	35	charge pipe, from	1	3	1
70	65	40	the level of this	1	8	1
80	75	45	pipe	1	8	1
90	85	50		1	8	1
100	90	50		1	8	1

11. Before selecting the samples from a reservoir or compartment, a water-sensitive ribbon is inserted for determining the depth of the underlying water (if any) that must be drained off.

NOTE: The presence of such water may be determined by taking a sample from the drain cock.

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12. The samples are taken off with a "sampler" (see Figure 1), of 1 liter capacity and with a heavy bottom for easy submersion. The sampler has an oval cover (on axis D) which fits snugly in an inclined position. The cover has two rings A and B for attaching lowering chains and a collar C to support a steel tape measure.

13. Clean, dry, and close the sampler. Suspend it on chain A and let it down into reservoir or tanker compartment to the desired level in accordance with the tape reading. Then release chain A. Sampler is now held by chain B; this opens the cover and permits the sampler to be filled with the product.

14. Air bubbles cease when sampler is filled. Chain B must now be slackened off and chain A pulled up. This closes the cover of the sampler and lifts it up.

15. From the sampler the product is poured into a clean container.

NOTE: When samples of volatile products (like gasoline) are taken, the container has to be tightly sealed.

16. The sampler, without cleaning, is then submerged to another level. Thus, one sample is taken from each given level.

NOTE: 1. It is also permissible to take samples in a tightly corked bottle (surrounded by a metallic frame) with a string attached to the cork. To the frame is attached a steel tape. In this case, the sample is taken by submerging the bottle into the oil and by pulling out the cork at a given level.

11. If the reservoir does not have a manhole, it is permissible to take the samples through the petcocks, located along the vertical line on reservoir.

17. Selected samples are delivered to the laboratory, where, by mixing them in proportions mentioned in paragraphs 9 and 10 of this standard, the composite sample is obtained.

18. From these composite samples, the control samples are taken out.

III. METHOD OF SAMPLING LIQUID PRODUCTS FROM TANK CARS

19. From two-axle tank cars, one sample is taken from the middle of the tank (at the point of intersection of a vertical line through the manhole with the horizontal axis of the car). From four-axle tank cars, two samples are selected: one at 200 mm from the bottom of the tank, and the second 200 mm below the liquid surface. From these, the composite sample is obtained.

20. In the case of delivery of petroleum products on train runs, a sample is taken from the lead tank car on the run, and one sample each from 10% of the tank cars on the run, to total not less than five samples in the case of consignments of from 10 to 60 cars, and not less than two samples in the case of consignments of less than ten cars.

A composite sample of the product carried on a run is obtained by mixing equal portions from all samples taken, except that from the lead tank car, from which a control sample is taken and analyzed separately.

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NOTE: When delivering aviation oils, spindle oil AU, and gasoline intended as a solvent, samples are taken from each tank car and acceptance of each car's product proceeds independently.

21. The samples from tank cars are taken in accordance with paragraphs 11-16 of this standard and from them, the control samples are taken.

IV. METHOD OF SAMPLING FROM PIPELINES AND FLUMES

22. A sample from pipelines and flumes (a so-called "running sample") is taken during receipt and delivery of petroleum products from two or more reservoirs.

23. From the pipeline, the samples are drained through a special sampling faucet (see Figure 2), fixed in the discharge or fill section of the pipe. Through the faucet, a series of samples of equal volume are taken every 30 minutes.

24. A ladle sampling from a flume is made every 30 minutes.

25. The samples are poured together into a dry container and stirred; from this, the control samples are taken.

V. METHOD OF SAMPLING LIQUID PRODUCTS IN SMALL CONTAINERS

26. The following shows what percentage of the containers is selected for a sampling at delivery: (a) 5% of delivered number of drums or barrels (but not less than two drums or barrels), and (b) 2% of delivered cans and tins (but not less than two).

NOTE: To select samples of solvent gasoline, aviation oil, and AU spindle oil, the products are divided into consignments by cars and samples are taken from 20% of the drums or cans in group.

27. Drums or barrels marked for sampling are to be rolled forward and backward, then stood upright with the plugs on top, cleaned with rags around the plugs, then the plugs removed and placed somewhere near the holes.

28. The cans and tins marked for sampling have to be shaken, then wiped with rags, the covers being removed and placed nearby.

29. The samples are taken with a long glass tube 20 mm in diameter or with a siphon.

30. When taking samples with a tube, press the thumb on upper end of the stem and lower it about 30 cm into the product; the thumb is now removed and the product enters the tube. Press the thumb down again; remove the tube, turn it upside down, and pour out the product.

Cover one end of the pipette again with the thumb, submerge it to the bottom, remove thumb, and let the tube refill. The again apply the thumb, remove the tube, and pour the sample into a clean container.

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31. When the sample is taken with a siphon, submerge this into the barrel or can about 30 cm deep and then lift the piston, permitting the cylinder to be filled; then withdraw the siphon and pour out the product. Then again submerge the siphon to the bottom, lift the piston, and let the siphon refill; then remove it and pour out the sample.

32. From all cans and tins, equal samples are taken. All the samples are poured into a dry, clean container, where they are mixed together and, from this mixture, the control samples are taken.

NOTE: 1. In the case of delivery of solvent gasoline from the drums or barrels and cans marked for sampling, individual samples are taken, and from these, the control samples.

11. In the case of delivery of aviation 1 and AU spindle oil, composite samples are taken from each consignment by car, and from these samples the control samples are then taken.

111. Gasoline samples are cooled in a stream of water for 10-15 min and stirred gently to prevent the loss of light fractions.

33. When the selection of samples is finished, the drums or barrels, cans, and tins have to be closed with plugs or covers.

VI. METHOD OF SAMPLING GREASE PRODUCTS

34. The samples are taken from the following number of barrels, cans, and boxes delivered:

<u>No of Containers Delivered</u>	<u>Samples Taken From</u>
1-5	All
6-125	5
126-200	6
201-350	7
351-500	8
501-725	9
726-1,000	10

35. The containers, marked for sampling are stood bottoms (barrels) or covers (cans and boxes) up. Then the barrel bottoms and can and box covers are wiped and removed and the top layer (10-15 millimeters deep) of product is skimmed off.

36. The samples are taken with a corkscrew rod or a piston-suction tube 400 mm long from boxes and cans, and 800 mm long for barrels. The lower opening of this tube has a wire, soldered across it.

37. In taking samples with the corkscrew-type rod, the rod is screwed into the product to the bottom and then extracted and the sample removed with a clean blade.

38. In taking a sample with the piston-suction tube, the tube (dry and clean) is pressed into the product all the way to the bottom, then given a 180-degree turn to cut the product with the wire; the tube is then extracted and sample pushed out with the piston.

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39. The samples taken from all barrels, cans and boxes must be of equal volume. Samples must be put into a clean, dry vessel and there mixed with a blade or paddle; the control samples are then taken.

40. On concluding the sampling, cover all the cans and barrels.

VII. METHOD OF SAMPLING MONOLITHIC AND LAMINATED PETROLEUM PRODUCTS

41. The samples are taken from 2% of the barrels, boxes, or bags, total samples to be not less than two.

42. The barrels marked for sampling are put in an upright position; upper covers are wiped with a rag and then carefully removed and laid aside (inner side up); then a layer of the product about 10 mm-thick is removed and a sample weighing about 1 kg is carved out with a heated knife.

43. The boxes and bags marked for sampling have to be opened and untied and then a layer taken from each box and bag.

44. From upper and lower edges and from the middle of the layer or piece, as in paragraph 42, small, equal scoops are cut out.

45. All these samples are put into a clean, dry vessel and turned over to a laboratory, where they are melted, stirred, molded, cooled, and the control samples taken from them.

VIII. METHOD OF SAMPLING POWDERED PETROLEUM PRODUCTS

46. Samples are taken from 5% of the bags or 1% of the packages delivered, but from not less than two bags or packages.

47. The samples are taken from the bags and packages marked for sampling by deep insertion of the same type of sampling rod generally used for the sampling of flour. The bags and packages are then tied as before.

48. The samples taken from all sacks and packages must be of the same quantity. All samples are poured into one clean, dry vessel and stirred, and control samples are then taken.

IX. METHOD OF SAMPLING LUMPY, NONMELTING PETROLEUM PRODUCTS

49. Samples are taken during the loading and unloading of cars and also during the formation of stockpiles. Two samples (2-6 kg) are taken with a shovel from top and bottom of every tenth wheelbarrow, car, or handbarrow.

50. To select samples from a stockpile, the pile is divided into three equal parts from bottom to top and into three to six parts longitudinally.

51. Then, from each part obtained by the above-described division, two samples are taken, weighing 2-6 kg.

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52. Hand-picking of sample pieces is not permitted. However, pieces appearing to be more than 250 mm across should not be taken for sampling.
53. Selected samples are put in a clean, dry box, and then mixed and covered.
54. Not later than 24 hours after selection, all sample portions should be crushed (using a hammer on an iron plate or in a special crusher) to pieces of not more than 25 mm across. The hammer, iron plate, and working parts of the crusher should be smooth and clean.
55. All crushed samples are to be placed on one iron sheet and mixed three times with a shovel.
56. Such a mixed sample is to be spread in a smooth, even layer, in square form, over the iron sheet and divided into four parts by two diagonals. Two opposing triangles of the four are then thrown out. The material left in the remaining two triangles is crushed again to 5-10 mm across and remixed.
57. The process described is repeated until the weight of the sample is from 2-3 kg; the control samples are taken from this.
58. The above procedure should be carried out in a place protected from dust and precipitation.

X. METHOD OF SAMPLING LUMPY,
MELTABLE PETROLEUM PRODUCTS

59. From different parts of a stockpile, or car, pieces of different sizes are selected; the total selected lumps should be about 1% of the weight of the whole lot.
60. From each of the selected lumps, a sample is cut from three different places.
61. The collected samples are then put into a clean, dry container and sent to a laboratory, where they are crushed, mixed, and the control samples taken from them.

XI. METHOD OF SELECTING
AND STORING CONTROL SAMPLES

62. The control samples are to be selected in quantities as required by appropriate standards relating to the particular product.
63. The control samples of liquid petroleum products are to be poured into clean, dry bottles. The bottles are never filled to the top, space being left for mixing the samples by shaking.
64. The control samples of grease products are to be placed in two clean, dry glass jars.
65. Control samples in molded form are to be cut into parts and each part packaged in parchment or similar material and bound with cord.

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66. Control samples of powdered or lumpy petroleum products are to be placed in two clean, dry glass jars.

67. Bottles must be tightly corked. Containers must be hermetically sealed or covered with parchment or similar material and secured with cord. The corks and covers are sealed with sealing wax by the inspector.

NOTE: The samples handed to an inspector (captain's sample as well) should bear the seal of the supplier.

68. Each bottle, container, or package is to be labeled as follows:

- a. Designation, type, and grade of product.
- b. Name of producing plant or of the base from which the product is sent.
- c. Consignment number (or tank car numbers, barrel numbers, etc.,) from which the sample was selected.
- d. The date sample was taken.
- e. GOST 2517-44.

69. One sample is sent to the laboratory for analysis of the product; another sample is retained by the supplier for a period of 2 months to cover possible requests for umpire analysis.

NOTE: In the case of shipments to the People's Commissariat of Defense and to the People's Commissariat of the Navy, the sample for umpire analysis is retained for 4 months. If the loading is done in the Far East or Transbaykal, the sample is retained for 6 months.

70. Samples for umpire analysis are stored in a dry place, protected from dust and precipitation.

XII. GENERAL INSTRUCTIONS

71. Before sampling, the entire lot of products marked for delivery is given over-all inspection. A product in faulty container or imperfectly marked, or tank cars with damaged seals, will be set aside and special individual and control samples will be taken.

72. Samples from small containers should be selected in places protected from dust and precipitation.

73. All apparatus and vessels used in sampling must be clean. Before use, they must be rinsed with the product that is to be sampled, or with gasoline, if the product is not liquid. After rinsing they must be dried.

74. All samples, if taken one after another (and later mixed for a composite sample) should be extracted with the same sampler. There is then no need of rinsing before each sampling.

75. Every individual sample is taken with a sampler which has been dried and cleaned, as specified in paragraph 73.

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76. All samplers, containers, etc., after use must be cleaned with gasoline, dried, and kept in a place protected from dust and precipitation.

Proposed by the Main Administration for supply of Petroleum Products to the National Economy under the Council of People's Commissars USSR.

Approved by the All-Union Committee on Standards 30 April 1944.

Effective 1 May 1944.

[Appended figures follow.]

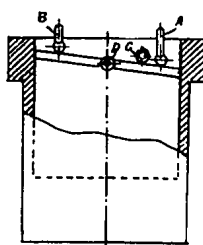


Figure 1

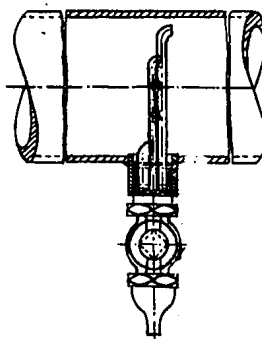


Figure 2

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